World Organisation for Animal Health

Vivian O'Donnell - - UNITED_STATES_OF_AMERICA

WOAH Reference Laboratory Reports Activities 2024

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Foot and mouth disease
***Address of laboratory:**	40550 NY-25, Orient Point, NY 11957
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***E-mail address:**	vivian.odonnell@usda.gov
Website:	https://www.aphis.usda.gov/labs/about-nvsl/faddl
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr. Robin Holland, Director, NVSL-FADDL
***Name (including Title and Position) of WOAH Reference Expert:**	Dr. Vivian O'Donnell, Biological Scientist, RVSS, NVSL, FADDL
***Which of the following defines your laboratory? Check all that apply:**	Governmental

TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

Diagnostic Test	Indicated in WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
3ABC ELISA	Yes	153	0
VIAA AGID	Yes	20	0

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Direct diagnostic tests		Nationally	Internationally
Virus Isolation	Yes	746	0
PCR (FADDL)	Yes	1139	0
Sequencing	Yes	0	35
PCR (NAHLN)	Yes	2002	0

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOAH Member Countries	Country of recipients
PCR Controls	FMDV rRT-PCR	FMDV/CSF positive amplification controls. Panel associated	218 vials	0	1	UNITED STATES OF AMERICA,
BEI Inactivated virus	FMDV rRT-PCR	SAT 1, SAT 2, SAT 3, Asia 1 and A	100 ml / serotype	0	1	UNITED STATES OF AMERICA,

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

No

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
Direct RNA FMDV Sequencing	Sequencing of FMDV on the Nanopore platform directly from the viral RNA without the reverse transcription step to reduce time and cost acquiring the whole genome sequence for characterization. Bio-Protocols. https://en-cdn.bio-protocol.org/pdf/bio-protocol5017.pdf
FMDV P1	Sequencing of FMDV P1 on Nanopore using Amplicon approach of P1 and Flongle flow cells to reduce cost and time for rapid characterization.

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

No

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

No

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

No

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAH Members?

No

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

No

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAH Member Countries involved other than your country
PD50	7 weeks	Vaccine Potency Test	NAVVCB	UNITED STATES OF AMERICA
PD50	7 weeks	Vaccine Potency Test	NAFMDVB (PIADC/CFIA)	CANADA
Epidemiology study of FMD in the Gambia: awareness, reporting, prevalence	2024	Testing apparently healthy indigenous sheep (n=469), goats (n=537) and cattle (n=399) for FMD Abs with ID Screen FMD NSP competition ELISA (Innovative Diagnostics).	West Africa Livestock Innovation Centre (WALIC)	GAMBIA
Investigation of Foot-and-mouth disease virus during an outbreak in Ghana. Next generation sequencing and Genomic surveillance.	2024	Out of 25 samples tested on rRT-PCR, all samples were interpreted as positive and characterized by sequencing. Whole genome and targeted PCR amplicon sequencing was performed.	Accra Veterinary Laboratory	GHANA
development and establishment of a multiplex RT-qPCR assay to differentially detect FMDV serotypes A, Asia 1, and O for epidemiological investigation of FMDV in	2024	Evaluating the performance of serotype specific primers and probes in single plex and multiplex assay formats.	Animal Disease Diagnostic Department, LEPL State Laboratory of Agriculture	GEORGIA

Georgia and Armenia.				
Use next generation sequencing to characterize FMDV samples from Gambia.	2024	Out of 10 samples tested on rRT-PCR, all samples were interpreted as positive and characterized by sequencing. Whole genome and targeted PCR amplicon sequencing was performed.	Department of Livestock Services, Abuko	GAMBIA

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

No

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

No

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

1
Direct RNA Sequencing of Foot-and-mouth Disease Virus Genome Using a Flongle on MinION. Xu et al, Jun 20, 2024. bio-protocol5017.pdf

Complete Genome Sequences of twelve Foot-and-Mouth Disease Viruses of Serotype O, Isolated from Cattle in Eastern and Northern Uganda between 2014 and 2017. Ochwo, S.; Ahmed Z.; et al. MRA, under review.

b) International conferences:

2
FMD Reference Laboratory Network Meeting, Rome 2024
EuFMD, Spain 2024

c) National conferences:

1
US Animal Health Association, American Association of Veterinary Laboratory Diagnosticians, 2024

d) Other (Provide website address or link to appropriate information):

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 0

c) Hands-on training courses: 4

d) Internships (>1 month) 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
C	UNITED STATES OF AMERICA	100

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 17025	Touchstone:Accreditation & Assessment Management System - Customer Portal (a2la.org)	
ISO/IEC 17043: 2010	Touchstone:Accreditation & Assessment Management System - Customer Portal (a2la.org)	

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Real-time reverse transcription PCR for the detection of Foot-and-mouth disease virus	American Association for Laboratory Accreditation (A2LA)
ELISA for detection of antibodies against nonstructural 2ABC protein of foot and mouth disease virus	American Association for Laboratory Accreditation (A2LA)
The vesicular antigen ELISA for the detection of FMDV in epithelial tissue samples, vesicular fluid, and cell culture isolates	American Association for Laboratory Accreditation (A2LA)
Virus isolation (VI) procedure for vesicular suspect samples	American Association for Laboratory Accreditation (A2LA)
The foot and mouth disease (FMD) virus infection associated antigen (VIAA) agar gel	American Association for Laboratory Accreditation (A2LA)

20. Does your laboratory maintain a “biorisk management system” for the pathogen and the disease concerned?

Yes

Biocontainment management, including BSL2 and BSL3 laboratories, Biosafety and Biosecurity management including risk assessment,

risk mitigation.

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
FMD Reference Lab Network Meeting	2024-09-25	Rome, Italy	Speaker, Attendee	NVSL-FADDL activities as a WOAH reference lab for FMD

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?

Yes

24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAH Ref. Labs/ organising WOAH Ref Lab
FMD qPCR	Organizer	30	NAHLN / USA

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

No

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen during the past 2 years?

No

No participation in inter-laboratories other than WOAH reference laboratories.

TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOAH?

No

29. Additional comments regarding your report:

No